7.1 INTRODUCTION

The prevention of ground water contamination from pesticides has been and will continue to be a priority in South Dakota. Existing pollution prevention activities along with a commitment to continuing these activities are cornerstones of the Pesticides and Ground Water State Management Plan (SMP). In the preamble of the Proposed SMP Rule, one of the keys to understanding the Environmental Protection Agency's (EPAs) preventative action philosophy is explained by the following statement: "Prescribing SMPs for individual pesticides fits under EPA's regulatory authority to regulate beneficial but potentially risky substances well before the onset of unreasonable adverse effects". South Dakota Codified Law §34A-2-104 states in part: "that groundwater must be protected, that once groundwater is polluted, it is extremely difficult and expensive to clean up, that both strong enforcement and public education are important and necessary components of the state strategy for minimizing and reducing potential pollution sources, and that effective preventative measures and swift response to releases of pollutants minimize ground water pollution." Both EPA and South Dakota have keyed on the pollution prevention aspect. Both have similarly attempted to limit unreasonable adverse effects to human health and the environment.

Preventative actions may be undertaken in the absence of detections and continued in the event of detections, regardless of the level. At 50% of the reference point, actions of Component 8 are initiated. An established reference point may be a Maximum Contaminant Level (MCL), a Health Advisory (HA) or a South Dakota water quality standard. The EPA has established a reference point for the each of the five proposed SMP pesticides (see Table 6.3 for the proposed SMP pesticides and their respective reference points). The State may establish a more stringent reference point if deemed necessary.

The goal of Component 7 is to prevent contamination, with the specific intent of avoiding reaching a reference point. Both regulatory and non-regulatory strategies developed to this point are described in this document. In order for the State to meet proposed federal SMP requirements some regulatory actions may require future rule development at the state level. The South Dakota Department of Agriculture (SDDA) has an interest in protecting both the State's agriculture and its ground water resources. It is envisioned that this goal will be met by limiting the number and severity of pesticide restrictions in areas of low sensitivity and by placing only such restrictions as are deemed necessary to protect human health and the environment in areas that are sensitive to pesticide leaching. A prevention plan to accomplish this is detailed in this document.

7.2 NON-REGULATORY PREVENTION ACTIVITIES

7.2.1 INFORMATION, EDUCATION, AND PUBLIC OUTREACH

Pesticide user education is the single most important step in South Dakota's prevention strategies and is the foundation for the South Dakota SMP. Current information and future developments related to the protection of ground water is made available to the pesticide user and the public. The following are examples of information, education, and public outreach tools:

- **Informational brochures** - The following are examples of currently available brochures related to pesticide use, storage, and disposal:

    ◊ *Storage and Disposal of Pesticides, Guide for the Homeowner* - This SDDA pamphlet is a general guide for homeowners on storage and disposal of pesticides and cleanup and disposal of flood damaged pesticides.

    ◊ *Pesticide Program* - This brochure is a general guide of the SDDA Pesticide Program and its responsibilities.

◊ *SMP Quick Reference Fact Sheet* - This is a one page description of the SMP process and discusses the background and necessity of the SMP and is published by EPA.

◊ *Pesticide Waste Minimization* - This SDDA informational packet includes recommendations for buying environmentally friendly pesticide packaging, for storage conditions and procedures, and for planning seasonal pesticide purchases to avoid buying more chemical than is needed.

◊ *Pesticide Use, a Guide to the Homeowner* – This is a brochure produced by SDDA providing the homeowner with information on pests and pesticide use. It also provides help in reading and understanding the pesticide label.

- **Periodicals and press releases** - A pesticide newsletter, public service announcements and press releases are used to inform applicators and the general public about proper pesticide use, ground water protection issues, and public hearings on rule changes. In addition to the mass media, the following are examples of publications that are intended for the pesticide user and provide timely updates to pesticide use issues:

◊ *Reg Alert* – This is a publication used by SDDA to inform pesticide dealers of time sensitive material related to pesticides. This includes label issues and the use, handling, transportation, storage and disposal of pesticides.

◊ *South Dakota Pesticide Applicator Update* - This quarterly newsletter is distributed by SDDA to all private and commercial applicators in South Dakota. It contains updates and special interest information in state, local and federal pesticide programs. More than twenty-five thousand newsletters are mailed, approximately each quarter, to applicators and other interested parties.

◊ *Rural Water Quality Newsletter* – This is a CES publication that highlights rural water systems and agricultural management practices. It is designed to affect agricultural profitability, while providing for an adequate supply of high-quality water for future generations.

◊ *South Dakota Farm and Home Research* – This is an Agricultural Experiment Station and SDSU document that for the past several years has included such topics as water quality, site specific agriculture, and agricultural management practices.

◊ *Workshops* - Workshops such as the multi-agency sponsored *Watershed Management Workshop for the James, Vermillion, and Big Sioux Rivers* and the DENR sponsored *Ground Water Quality Conference* bring together the general public and local, state, and federal officials. Workshops present the latest information regarding research and resource protection efforts.

◊ *Localized Mailings* - Specific area targeted mailings may be used by the SDDA to present pesticide-specific information to applicators.

◊ *Public Service Announcements* - This medium is used by many agencies and groups to inform the general public about pesticide issues that may impact ground water.

- **Technical publications**

  ◊ *South Dakota Technical Guide* - This information is designed for use by technically trained persons in the NRCS, other federal agencies, and state agencies. It is also used to assist landowners, land managers, or responsible officials to plan, apply and maintain appropriate conservation practices.

  ◊ *Fertilizer And Pesticide Bulk Facilities Manual* - This manual contains fertilizer and pesticide rules, a guide to pesticide disposal, and a spill response guide. Example bulk storage facility construction criteria for both fertilizer and pesticides are listed in the manual. The main focus of this manual is to assist individuals in constructing storage facilities that protect the environment. This manual is available through the SDDA.

  ◊ *Fact Sheets*

    * The *Cooperative Extension Service* provides a wide variety of information concerning resource protection and agricultural management practices. These technical publications are available to the consumer and deal with a wide variety of subjects including: chemigation, pesticide use, water treatment and drinking water standards. A current list can be found in Appendix L. Copies are available at local CES offices and the CES Bulletin Room.

    * The *South Dakota Department of Agriculture* has also produced several pesticide fact sheets that are designed to provide basic pesticide information to the homeowner, and private and commercial applicators. Information includes pesticide use, safety, and human health and environmental protection information. These publications are listed as follows:

      ° *General Pesticide Safety* - This pesticide fact sheet is a quick reference guide to several major areas of pesticide safety and for prevention of accidental pesticide contamination.

      ° *Granular Application Equipment Calibration* and *Hand Sprayer Equipment Calibration* - These fact sheets target the homeowner and outline several reasons for proper calibration. They provide methods for calibration on small areas and a discussion is provided on how to understand the pesticide label.

      ° *Pesticide Record Keeping* - This fact sheet produced by the National Association of State Departments of Agriculture and USDA, outlines the pesticide record keeping requirements for certified private applicators.

      ° *Pesticide Operational Area Containment Rule* - This is a quick reference guide discussing the Operational Area Containment rule, providing information on the rule that protects the environment from certain pesticide spills.

* *Refereed Publications* - Important sources of research information concerning pesticide properties, how pesticides leach to ground water, how pesticides move in ground water and South Dakota's related geology may be found in refereed publications. Several refereed publications dealing with issues related to pesticides and ground water may be found in Appendix M.

* *University Courses* - Leading edge technical training related to pesticides and/or ground water can be found in South Dakota's state university system. Agricultural water quality related courses are found in Appendix N.

7.2.2 TECHNICAL ASSISTANCE

Technical assistance programs are critical to the success of the SMP. Specific information about how pesticides react in the environment and how best to protect the environment are essential facets of a pesticide specific management plan. Technical assistance is provided to pesticide and water users by several local, state, and federal agencies, private organizations and industry. Technical assistance is provided in many ways including, but not limited to the following:

- **Pesticide Container Recycling** - The SDDA pesticide container recycling program reduces the amount of plastic containers, steel cans, and drums that in the past ended up in landfills and in the environment. Plastic pesticide containers are burned for energy recovery. They are also recycled into pesticide shipping pallets, wood replacement products, speed bumps, agricultural field drain tiles, and hazardous waste drums, thus reducing the risk of pesticide exposure to humans and to the environment.

- **Waste Pesticide Collection Program** - This SDDA program provides collection points and disposal for unusable pesticides, at no cost to the person wishing to dispose of the pesticide. Unusable pesticides are collected and properly disposed of, reducing the risk of pesticide exposure to the environment and human health.

- **Pesticide Handling and Discharge Response Procedure and Plan Methods** - These procedures were designed by SDDA to help dealers and applicators develop written plans for equipment maintenance and pesticide handling to prevent releases from occurring during everyday operations. They provide strategies to protect pesticide applicators, the public, and the environment in the event of a pesticide discharge.

- **Best Management Practice (BMP) Development and Implementation** - There are several sources and delivery mechanisms of this information. A primary source is the South Dakota Technical Guide, which contains information developed by the NRCS. The Technical Guide is a major reference for addressing the top priority resource goals of the 1988-1997 USDA National Program For Soil And Water Conservation. A major goal is the protection of surface and ground water from nonpoint source pollution. A few BMP example categories are:

  ◊ *Integrated Pest Management (IPM) and Integrated Crop Management (ICM)* - These two methods provide specific technical information to producers, applicators, farm managers, and others so that pesticide management decisions are based on best available data.

- ◊ *Buffer Strips* - Buffer strip recognition is already incorporated in some pesticide labels. The South Dakota Conservation Commission has indicated that this is an approved use of its funding for site specific BMPs designed to prevent pesticide contamination of both ground water and surface water.

- ◊ *Abandoned Well Plugging* - An abandoned well may be a direct conduit to an aquifer. It may introduce surface contamination into ground water. Some pesticide labels do not allow mixing, loading or application near an abandoned well. Plugging an abandoned well is also an approved use of Conservation Commission funding.

- **Compliance Assistance** - This SDDA program is designed to enhance compliance with pesticide regulations by utilizing additional methods of providing information and education to the regulated public. Meetings between commercial applicators, private applicators or pesticide dealers and SDDA are specifically designed to provide an opportunity to discuss regulations and provide answers in a non-enforcement type setting.

- **Dealer Sponsored Grower Group Meetings** - Pesticide dealers commonly sponsor meetings for growers. These meetings are a forum for information exchange related to the latest label changes, pesticide specific SMPs, voluntary and mandatory management plans, and farm site assessments.

- **Wellhead Protection Program Development and Implementation** – The DENR and others provide local communities technical assistance to develop and implement voluntary wellhead protection programs. This program is designed to protect public water supplies from potential sources of contamination. Surface areas around wells and wellfields are delineated and potential sources of contamination are identified and managed to prevent contamination of the water supply.

- **Farmstead Assessment System** – FARM-A-SYST was developed for South Dakota farmstead residents by the CES. This point source targeted program is designed to provide the farmstead residents a means of assessing the vulnerability of their domestic water supply to contamination. It will provide them with accurate site specific information and recommendations for practices that may be affecting their ground water. The program investigates the risk of farmstead practices such as pesticide storage and handling. Hazardous waste management is also included. The Field Assessment System and the Homestead Assessment System are currently being developed for South Dakota. There has also been renewed interest from private organizations, such as the South Dakota Cattlemen's Association, to have an independent program that would assist producers in performing on site assessments.

- **Certified Crop Advisors Program** - This program is an essential link for South Dakota to develop and implement BMP, ICM, and IPM programs. The program is designed to establish base standards of knowledge for individuals who advise growers on crop management and production inputs. The program has an exam, provides for continuing education, and operates under a code of ethics. The national exam covers: soils and soil fertility, soil and water management, plant growth and development, and pest management. A State Board establishes standards, administers exams, and provides certification for the Certified Crop Advisors Program.

- **Extension Environmental and Pest Management Programs** - Extension specialists are available in a variety of capacities. They range in expertise from pesticides and specific commodities, to water quality and soil specialists. The 1990 USDA Farm Bill program requires producers to keep records of restricted use pesticide applications.

7.3 REGULATORY PREVENTION ACTIVITIES

Development of Pesticide Specific State Management Plans could require SDDA to develop a State Pesticide Specific Management Plan Rule, if it is determined that voluntary measures are not effective in adequately addressing the prevention goals. Within any given PSSMP, the SDDA may utilize both voluntary and/or mandatory restrictions. If a plan consists only of voluntary provisions, rule development would not be necessary. Any mandatory label requirements or use restrictions (including product cancellation) will require SDDA to develop a rule.

7.3.1 PESTICIDE APPLICATOR CERTIFICATION AND TRAINING

Pesticides and their potential impact on ground water have been incorporated into South Dakota's core certification training manual Applying Pesticides Correctly. Certification meetings are the primary method of instruction for applicators concerning how to safely apply pesticides and provide environmental stewardship.

Private applicators must be certified before they use or purchase a restricted use pesticide. State law requires anyone to be certified before they use any pesticide in the production of an agricultural commodity with the gross sales potential of $1,000 or more on land owned by them. Private applicator certification is valid for 5 years. Most commercial applicators must be licensed and certified. Certification is valid for 2 years and the license is valid for 1 year.

7.3.2 PESTICIDE CONTAINMENT

Bulk pesticides in permanent tanks larger than 300 gallons must be stored within secondary containment to prevent contamination of the environment. Pesticides that are mixed or loaded near or over sensitive areas require secondary containment under certain conditions.

7.3.3 CIVIL PENALTY

Civil penalties for violations of SDCL §38-21 (Agricultural Pesticide Application) and §38-20A (Pesticides) are assessed by the circuit court. However, SDDA may propose a settlement offer according to a penalty matrix. It is a policy of SDDA to allow the respondent an opportunity for a meeting or to otherwise supply information to the department regarding an investigation before SDDA takes formal action. In addition, SDCL §38-20A provides an opportunity for the respondent to present his or her views before a proceeding takes place regarding registrations, misbranding, inspections, or sampling. The Pesticide Enforcement Action Penalty Policy document containing the penalty matrix is in Appendix I.

Alternatives to civil penalties for violations of SDCL §38-21 and §38-20A have been developed to provide the responsible party and the local community the opportunity to use the enforcement process as an educational opportunity. The positive actions of learning more about proper pesticide use and pollution prevention activities, such as construction of catch basins for pesticide equipment parking areas, are seen as viable alternatives to civil penalties.

7.3.4 STATE MANAGEMENT PLAN RESTRICTIONS

Federal restrictions

State Management Plan (SMP) *Restricted Use Pesticide* classification - Restrictions will be placed on the sale and use of certain pesticides due to ground water concerns.

Restricted Use Pesticide (RUP) in the conventional sense - Limits use and sale to certified applicators. Restricted Use Pesticides also entail record keeping and dealer licensing. State Management Plan pesticides may be designated as RUPs by the federal rule making process.

State restrictions

State Restricted-Use Pesticide - SDCL §38-21-39 allows for the State to adopt federal RUP classifications. This law also allows SDDA to classify a pesticide as a State Restricted Use Pesticide.

Restrict The Use Of Certain Pesticides - SDCL §38-21-39 also allows SDDA to restrict the use of certain pesticides or disallow the use of certain pesticides for this state or for designated areas within the state (SMP activities).

7.4 SMP USE CLASSIFICATION

The EPA will designate certain pesticides as SMP pesticides. The State must then develop a Pesticide Specific State Management Plan (PSSMP) in order to continue to use and sell the pesticide in South Dakota. State Management Plan Pesticides will be managed by the details found in the PSSMPs. These PSSMPs then become a part of the pesticide label. The proposed label will state: "For use only in accordance with an EPA-approved State Management Plan for ground water protection. Sale and use are prohibited in States that do not have an EPA-approved State Management Plan." Restrictions placed on these pesticides will be done by State rule.

The trigger for the State to implement prevention actions is based on use of the product in South Dakota. Many of the preventative measures mentioned above are on-going programs and will continue in the event of no detections. On a national level EPA has documented (in the SMP guidance and proposed rule) that in certain localized areas pesticides have leached to ground water and may pose an unreasonable risk to human health and the environment. South Dakota has found, as documented in the Statewide Ground Water Quality Monitoring Network, one atrazine concentration and seven cyanazine concentrations in ground water, greater than the proposed reference points.

This component, "Prevention Actions," considers appropriate measures to prevent pesticide contamination of ground water. If the prevention actions do not prevent detections, then other more stringent preventative actions along with "Actions in Response to Detections" (Component 8) may be implemented. Additional pesticide specific prevention actions are termed "Specific Pesticide Control Measures".

7.4.1 SPECIFIC PESTICIDE CONTROL MEASURES

These actions, depending on the severity of, or trends involved with, the contamination, may range from stepped-up educational efforts to cancellation of the product, under Component 7 - Prevention Actions. A Pesticides and Ground Water Advisory Group (PAGWAG) may consider, but is not limited to, any number of the details found in Box 7.1. They would then provide a recommendation to SDDA on what Specific Pesticide Control Measures to take. The SDDA has the final authority concerning SMP measures and actions.

Box 7.1
Advisory Group Considerations

Extent and frequency of detections
Associated detection trends
Significance of detected concentration
Crop, non-crop use and irrigation use
Current application practices
Pesticide sales and use data, and trends
Precipitation and other weather data
Soils data
Pesticide leaching and other chemical data
Geologic data and hydrogeologic data
Availability of alternative pesticides
Non-chemical alternatives
Environmental practices
Economic impacts
Potential health and environmental impacts
Product toxicity
Monitoring data
Dealer participation
Pesticide statute and rule compliance
Other pertinent issues

Specific Pesticide Control Measures designed under the prevention mode may include voluntary actions, such as a BMP education program, or when necessary, mandatory management practices, rate reductions, mandatory setbacks from wells or other actions. Table 7.1 lists a few types of restrictive management practices that SDDA may choose to pursue, depending on the specific problem encountered. Some Specific Pesticide Control Measures may require rulemaking. Cancellation of a product registration requires a hearing under the provisions of SDCL §1-26 if the registrant requests it.

Table 7.1 Examples of Specific Pesticide Control Measures.

MANAGEMENT PRACTICES	DESCRIPTION
Setback Areas	Buffer zones may be required near surface water, wellheads, springs or other yet to be determined areas to limit application in these sensitive areas.
Restriction To Soil Type	Application of the pesticide may be limited to soil types that limit or restrict pesticide leaching. Considerations may include but are not limited to finer textured soils, high organic matter soils, soils with low permeability and depth to ground water greater than 50 feet.
Application Rate	A lower rate of application may be required where a soil has a low pesticide holding capacity.
Application Method	Methods of application that reduce the potential of a pesticide to leach such as banding application and band placement may be required.
Application Timing	Seasonal changes or yearly limitations in rates may be required.
Site-specific Management Plan	The presence of sensitive areas or chemical composition factors that may lead to leaching, presents a complex situation that will require the SMP advisory group and other experts to make recommendations to SDDA for site-specific restrictions.
Other Restrictions	Additional restrictions may become evident as the investigative process continues. More or more stringent restrictions, such as where a pesticide may be mixed or loaded may be employed.
Cancellation	Pesticide may not be sold or used in a specific area.

7.5 MINIMAL PLAN

Certain low risk situations due to use or use in areas of minimal risk to ground water contamination may justify a "minimal plan". South Dakota would pursue such a plan by using the flexibility already built into the SMP process. A Pesticide Specific Minimal Plan would reference the Generic SMP, account for actual pesticide use (current and previous), and account for pesticide detections in the ground water. A process will be implemented based on the following progression:

- Wide spread minimal use and no detections.
  - ◊ State continues to define pesticide use and potential water quality impairment.
  - ◊ Pesticide use practices, cautions, and all other items normally covered in an SMP are provided for in the current federal label.
  - ◊ State continues to carry out current preventative measures.

- Minimal use plus a detection(s) found in a specific area at a level that warrants site specific PSSMP development. All other areas of the state remain under the minimal plan.
  - ◊ The federal label provides for all areas except those sites that require a site-specific plan. These site-specific areas will be under the control of the developed PSSMP.
  - ◊ The SDDA must assure EPA that it will take appropriate interim action while developing the PSSMP. In the interim the Generic SMP activities would be used.

- Detections of a pesticide are found to be widespread. The State will develop a PSSMP.
  - ◊ PSSMP will be developed for the pesticide consistent with the Generic SMP.
  - ◊ The Generic SMP will be used in the interim as development of the PSSMP progresses.

The state believes this approach will protect the state's ground water from pesticide contamination and allow minor use SMP pesticides to continue to be used without undue burden to the applicators or the state regulatory agencies.